

WHAT IS CLAIMED IS:

1. A catalyst element for a stacked reactor for generating hydrogen from hydrocarbons, comprising:

a catalyst disc of porous material;

a solid connection element having a catalyst-side end that is at least partially enclosed by and joined to the catalyst disc; and

attachment means at an exposed end of the connection element at a distance from the catalyst disc.

2. A catalyst element according to Claim 1, further comprising a mediator layer between the catalyst-side end of the solid connection element and a surface of the catalyst disc.

3. A catalyst element for a stacked reactor for generating hydrogen from hydrocarbons, comprising:

a catalyst element of porous material;

a solid connection element having a catalyst-side end;

a mediator layer joined to the solid connection element over an entire area by sintering, soldering, or adhesive bonding, wherein the mediator layer is joined to the catalyst disc over an entire area by sintering; and

attachment means at an exposed end of the solid connection element which is at a distance from the catalyst disc.

4. A catalyst element according to Claim 2, further comprising an electrodeposited metal layer between the solid connection element and the mediator layer.

5. A catalyst element according to Claim 1, wherein the catalyst-side end of the solid connection element comprises a projection that extends substantially perpendicular to an

expected principal direction of load on the connection between the catalyst disc and the solid connection element.

6. A catalyst element according to Claim 1, wherein:
a surface region of the catalyst-side end of the solid connection element ends substantially flush with an outer surface of the catalyst disc, and
a section of the catalyst-side end extends at least partly parallel to the outer surface of the catalyst disc.

7. A catalyst element according to Claim 1, wherein the solid connection element has at least one passage by which at least one of reaction starting materials or reaction products are supplied or discharged.

8. A stacked reactor for generating hydrogen from hydrocarbons, comprising a plurality of catalyst discs and at least one catalyst element according to Claim 1 as a catalyst connection disc.

9. A catalyst element for a stacked reactor for generating hydrogen from hydrocarbons, comprising:
a catalyst disc of porous material;
a connection element having a catalyst-side end that is at least partially enclosed by and joined to the catalyst disc; and
a screw connection at an exposed end of the connection element at a distance from the catalyst disc.

10. A process for producing a catalyst element, comprising:
joining a surface of a connection element to a mediator layer by sintering, soldering, or adhesive bonding; and
joining a free side of the mediator layer to a porous catalyst disc by sintering,

wherein the connection element has attachment means at an exposed end of the connection element at a distance from the catalyst disc.

11. A process according to Claim 10, further comprising applying a metal layer by electrodeposition to the catalyst-side end of the connection element before joining the mediator layer.

12. A process according to Claim 10, wherein the joining of the mediator layer to the surface of the catalyst disc is by sintering at approximately 400°C to 600°C under pressure.

13. A process according to Claim 10, wherein the joining of the mediator layer to the connection element is by sintering at approximately 600°C to 1000°C.

14. A process according to Claim 10, wherein the joining of the mediator layer to the connection element is by soldering at approximately 800°C to 1000°C.

15. A process for producing a stacked reactor, comprising sintering a catalyst element according to Claim 1 together with additional catalyst discs in a stacked state.

16. A process for producing a stacked reactor, comprising:

joining a surface of a connection element to a mediator layer by sintering, soldering, or adhesive bonding; and

joining a free side of the mediator layer to a porous catalyst disc by sintering, thereby producing a catalyst element;

stacking the catalyst element with a plurality of catalyst discs to form a stack; and
sintering the stack.